



Hydrogen Fluoride Industry
Practices Institute

RSPA-1998-12611-1

June 4, 1998

Dockets Unit
US Department of Transportation
Research and Special Programs Administration
Nassif Building, Room PL 401
400 Seventh Street, SW
Washington, DC 20590-001

Re: Petition for Rulemaking
Modifications to DOT Requirements for ISO Tanks Used in HF Service

Dear Sir or Madam:

Enclosed are six copies of a petition for rulemaking from the Hydrogen Fluoride Industry Practices Institute (HFIFI) proposing certain modifications to design and construction requirements for ISO tanks in HF service.

The HFIFI appreciates the opportunity to submit this petition. If there are any questions or requests for additional information, please feel free to contact me. I can be reached at 202-342-8538 or 703-741-5613 (telephone), at 703-741-6091 (telefax), KATHLEEN_ROBERTS@MAIL.CMAHQ.COM (e-mail).

Regards,

Kathleen M. Roberts
HFIFI Administrator

**BEFORE THE UNITED STATES
DEPARTMENT OF TRANSPORTATION**

**PETITION OF THE
HYDROGEN FLUORIDE INDUSTRY PRACTICES INSTITUTE
TO MODIFY
DOT IM-101 AND DOT 51
AS THEY PERTAIN TO ISO TANKS
IN HYDROGEN FLUORIDE SERVICE**

June 4, 1998

Hydrogen Fluoride Industry Practices Institute
c/o Collier, Shannon, Rill & Scott
3050 K Street, NW
Washington, DC 20007

**PETITION OF THE
HYDROGEN FLUORIDE INDUSTRY PRACTICES INSTITUTE
TO MODIFY
DOT IM-101 AND DOT 51
AS THEY PERTAIN TO ISO TANKS
IN HYDROGEN FLUORIDE SERVICE**

I. INTRODUCTION

The Hydrogen Fluoride Industry Practices Institute (HFIPI) is petitioning the U.S. Department of Transportation (DOT) to change certain provisions of DOT IM 101 and DOT 51 as they relate to the design and construction of ISO tanks for hydrogen fluoride (HF) service (CFR 172.101 and CFR 178.245). Specifically, the HFIPI requests that HF ISO tank construction be limited to the specifications in DOT 51. Further, the HFIPI has recommended changes to DOT 51 to clarify certain requirements for HF transportation. The purpose of these changes will be to require greater restrictions on the materials of construction for these containers so as to better ensure the safe transportation of HF.

The HFIPI was established in March 1994 as a subsidiary of the Chemical Manufacturers Association. Its objective is to educate members of the HF industry by developing and publishing recommended practices specific to HF. Current HFIPI members include the following companies:

OSRAM Sylvania Inc	AlliedSignal
DuPont	Chemtech Products
Amoco Chemical Company	Quimica Fluor S.A. De C.V.
3M Specialty Materials	LCI/Norfluor
Occidental Chemical Corporation	Daikin America, Inc.
ICI America	

The HFIPI recognizes that the safe and reliable transportation of hydrogen fluoride in ISO tanks requires careful selection of materials of construction, fabrication procedures, and detailed materials testing. Based on the experience of the its members, the HFIPI has developed guidelines that provide recommendations on ISO tank construction in an effort to provide greater protection and safety. It is anticipated that these guidelines will be ready for publication by late 1998.

II. PROPOSED CHANGES

- A. Section 172.101
Eliminate "T24" from the special provisions (column 7) for hydrogen fluoride, anhydrous.

Reason: "T24" allows for the use of IM-101 as a specification for transportation vessels and IM-101 does not require post heat weld treatment. However, members of the HFIPI believe that postweld heat treatment is a necessity with vessels in HF service and have specified postweld heat treatment for carbon steel

vessels in its guidelines. It is well known in the HF industry that there is a possibility of developing a high hardness on a weld heat affected zone (HAZ) with carbon steel. The hardness of the HAZ can then be susceptible to stress corrosion cracking, which potentially can lead to vessel failure. HFIPI specifies postweld heat treatments for carbon steel welds in order to achieve sufficient stress relief, which lowers the hardness and significantly reduces residual stress, thereby reducing, but not eliminating, the potential for cracking.

In addition, IM-101 does not require ASME certification or the ASME "U" stamp. (See Section 178-271-1(c)) Based on experience of the HF industry, the HFIPI guidelines specify that vessels must be designed, constructed, and inspected according with ASME Code Sec. VIII Div. 1, most recent edition and must be ASME "U" stamped in an effort to better ensure quality vessels.

B. Section 178.245-1(b):

Add the following to Section 178-245-1(b): "For anhydrous hydrogen fluoride, Part UHT of the ASME Code is not allowed. In addition, postweld heat treatment must be at 1200°F, +/- 50°F. Hardness on the weld heat affected zones must be a maximum 248 dph."

Reason: As this paragraph currently reads, it allows the tank to be constructed in accordance with part UHT of the ASME Code. This would be unacceptable for HF service, since part UHT is for vessels constructed of ferritic steels with enhanced tensile properties and ferritic steels must be avoided on HF service due to potentially damaging reaction problems.

The paragraph currently provides specifications post weld heat treatment for an anhydrous ammonia tank. Given the importance of the post weld heat treatment for tanks in HF service, the HFIPI recommends that specifications be provided for tanks in anhydrous hydrogen fluoride service as well. In its guidelines, the HFIPI has specified a procedure for postweld heat treatment that has been found to be accepted for HF service (See attached). That procedure calls for treatment to be at 1200°F, +/- 50°F and a maximum 248 dph on the heat affected zones.

C. Section 178-245-2

Add the following to Section 178-245-2(b): "For anhydrous hydrogen fluoride, a material thickness less than ½ inch, including corrosion allowance, shall not be used for the shell and heads."

Also add the following paragraph to Section 178-245-2:

“(c): For anhydrous hydrogen fluoride, tank pad and pads to tank welding material shall be the same or similar materials used on the tank.”

Reason: In order to adequately maximize the integrity of vessels in HF service, the HFIPI members have determined that thicker materials are necessary. The specification for similar welding materials is to provide greater protection against potentially harmful reactions of incompatible materials on the HF vessel.

D. Section 178-245-3

Add the following to Section 178-245-3: "Design, construction, inspection and approval of the tank must be by ASME Code and by an ASME inspector."

Reason: Based on experience of the HF industry, the HFIPI guidelines specify that vessels must be designed, constructed, and inspected according with ASME Code Sec. VIII Div. 1, most recent edition and must be ASME "U" stamped in an effort to better ensure quality vessels.

III. CONCLUSION

The HFIPI appreciates the opportunity to submit these proposed changes to the U.S. DOT for consideration. We would recognize that these changes would impose more stringent requirements on vessels used for HF service, but equally recognize that these are important in providing greater protection to the public and the environment.